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General

WITH HAMMER AND TONGS

MALLEABLE METALS IN DIVERSE DESIGNS

AN EXHIBITION AT THE COOPER UNION
MUSEUM FOR THE ARTS OF DECORATION
COOPER SQUARE AND SEVENTH STREET
FEBRUARY 4TH THROUGH MARCH 22ND
1941

WITH HAMMER AND TONGS

An Introduction by SAUL YALKERT
Division of Industrial Design, Cooper Union Art School

THE exhibition, *With Hammer and Tongs*, calls attention to a selection of objects of malleable metal drawn principally from the Museum's permanent collection. The transference of these objects from their accustomed settings to the special exhibition area gives them a new emphasis. This is significant both for the outside visitor and the student of the Cooper Union Art School. The visitor benefits by the exhibition's interpretive function. The student, a native member of the Museum's public for whom the permanent collection is a constant reference source, gains additional instruction from the changing exhibitions, and becomes more pointedly aware of the similarity of purpose shared by the Art School and the Museum. His mind is clarified by these restatements of his problems outside the boundaries of his classroom.

Industrial design teaching is formulated here to cover, by analogy, the existent practices in the field and factory today. It embraces machine fabrication, in both limited production and mass production, of many objects from accessories to heavy industry. These products, to achieve organic and esthetic unity, and to incorporate beauty as well as usability, must be designed to express the tool and to meet the requirements of the material, the price, and the psychological appeal. Out of the materials laboratory comes an appetite for exploration, a feeling for the inherent aspects—tactile, structural, and constructural—of material. A non-rigid, experimental method opens up fresh frontiers of work, and a series of tactile studies for the sharpening of visual sensory perceptions concurs with instruction in hand and power tools. The precise manner of tooling a metal, for example, its susceptibility to various types of tooling, are experimented with, and the immediate results and evidences are recorded. A step by step analysis develops an objective or critical attitude and shows context and approach to be inseparable in industrial design.

The modern designer chooses materials for their esthetic and technical characteristics. His choice of one of many equally suitable materials is governed by those of its physical traits which afford the widest exploitation for the best esthetic result. Dominant attributes of the selected material and its unique fitness for the projected design are stressed: for example, the intrinsic quality and the grain in wood, the hardness and workability of metal, the fictile nature of plastics, the enduring temper of stone, the transparency of glass. Materials are combined for color, contrast, and the elimination of sensory fatigues. The technical factors determining choice are the fitness, facture, and responsiveness of the material.

The ready yielding of metal to precise surface articulation depends upon the tool used and the degree of malleability. *Repoussé*, either intaglio or relief, is achieved by hammering or pressing. Spinning is the exerting of pressure upon metals against revolving forms called chucks. More complex machine methods of forming are die pressing, rolling, and extruding. Metal is one of the few materials perfectly adapted to either manual or machine production, since its malleability is no longer a static quality. Through the wizardry of modern metallurgy, malleability can be precisely determined, and any given degree produced, the hardness or softness established and maintained at whatever point it is required. The manual craftsman generally was governed by malleability, and his only method of altering it was by pressure, such as that of beating or hammering, or in the case of iron, by tempering. The modern craftsman can not only govern this important quality by changing the carbon content, by heat treatment, or by the introduction of alloys, but can choose among new metals and alloys which were not available to the older craftsman.

The present exhibition should serve to remind both visiting public and student that it is material, the beauty and latent strength of substance in all its kinds, which has challenged man's creative efforts. And however simple or complex man's environment, the basic reason for the transfer of substance into created form is use. Into this great domain is fitted whatever is in his museums, his home, his work. He learns by knowing what has been made, he makes with his knowledge of what is his to use.

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OTHER METALS

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